IN THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-21 (Cancelled)

Claim 22 (Currently Amended): A CO_2 gas seal device comprising:

means ~~(11, 13)~~ for sealing the CO_2 gas; and

first and second connecting hollow members ~~(7, 9)~~,

~~the connection of~~ said first and second connecting hollow members ~~(7, 9) forming~~ being connected by a connection part having a hollow part for passing the CO_2 gas through it between said first connecting hollow member and said second connecting hollow member and ~~forms~~ forming a groove ~~(19G, 17G1, 17G2, 19G1)~~ at a gas leakage part in the connection part,

said groove having a first part and a second part connected to the first part and having a sectional area smaller than that of the first part along the direction of leakage of said CO_2 gas, the second part ~~has~~ having a tapered surface inclined so that its thickness becomes smaller along the direction of leakage of said CO_2 gas,

said gas sealing means having an O-ring ~~(11)~~ made of rubber arranged at the first part of said groove and one backup ring ~~(13)~~ made of 46Nylon arranged at the second part of said groove,

said backup ring having an inclined surface contacting the tapered surface of the second part of said groove, being enlarged in a diametrical direction at the second part of said groove by said CO_2 gas, ~~the deformation of said O-ring (11), and a pressing action by the movement, and moves over the second part of said groove,~~

an angle of said inclined surface of said backup ring ~~(13)~~ being larger than the angle of the tapered surface of the second part of said groove, ~~the~~ an inclined surface of the first gas seal member ~~is~~ being crushed at the time of the pressing action by said CO_2 gas to further narrow the clearance of said second part, and

a front end of the second part of said groove being provided with a clearance from which said backup ring can be projected,

said first connecting hollow member having a first main body and a housing formed integrally with the first main body and having a hollow part,

said second connecting hollow member having a second main body and a shaft formed integrally with the second main body, having a hollow part, and

having a shaft having an outside diameter enabling insertion into the hollow part of said housing,

said shaft being inserted with a predetermined clearance into an inner wall of the hollow part of said housing so that the hollow part of said shaft faces the hollow part of said housing,

said groove being positioned between the outer circumference of said shaft and the inner wall of the hollow part of said housing and having a first part into which said CO_2 gas is introduced on the outer circumference of said shaft or the inner wall of the hollow part of said housing along a direction of flow of said CO_2 gas and a second part which continues from the first part, having a smaller cross section than the cross section of said first part, and from which said pressurized gas is discharged,

said O-ring being arranged at the first part of said groove contacting the outer circumference of said shaft and the inner wall of the hollow part of said housing, and

said backup ring being arranged at the second part of said groove,

the second part of said groove being inclined so as to become shallower than a depth of said first part in a direction of discharge of said gas,

the angle of said inclined surface of said backup ring contacting the second part of said groove being larger than the angle of the inclined surface of the

second part of said groove, and the front end of the inclined surface of the first gas seal member being crushed at the time of the pressing action by said pressurized gas to further narrow the clearance of said second part,

a space between the hollow part of said housing and the outer circumference of said shaft forming the first part of the groove,

an end surface on the front end of said housing and a clearance facing the end surface of the main body of said second connecting hollow member forming the second part of said groove, and

a sheet-shaped second seal member being fit at the second part of said groove.

Claim 23 (Previously Presented): The CO_2 gas seal device as set forth in claim 22, wherein said O-ring arranged at the first part of said groove and the backup ring arranged at the second part of said groove are deformed due to a pressure difference along a direction of gas leakage of said CO_2 gas.

Claim 24 (Currently Amended): The ~~connector~~ CO_2 gas seal device as set forth in claim 22, wherein:

said CO_2 gas is heated, and

said O-ring and said backup ring ~~(11, 13)~~ are heated by the temperature of said heated CO_2 gas and further expand and deform inside said groove.

Claim 25 (Currently Amended): The CO_2 gas seal device as set forth in claim 22, wherein:

said first connecting hollow ~~part (7)~~ member has:

a first main body ~~(70)~~ and

a housing ~~(17)~~ formed integrally with the first main body ~~(70)~~ and having a hollow part ~~(73)~~,

said second connecting hollow ~~part (9)~~ member has

a second main body ~~(90)~~ and

a shaft ~~(19)~~ formed integrally with the second main body (90), having a hollow part ~~(93)~~, and having a shaft ~~(19)~~ having an outside diameter enabling insertion into the hollow part ~~(73)~~ of said housing ~~(17)~~,

said shaft ~~(19) is~~ being inserted with a predetermined clearance ~~with~~ into an inner wall of the hollow part ~~(73)~~ of said housing ~~(17)~~ so that the hollow part ~~(93)~~ of said shaft ~~(19)~~ faces the hollow part ~~(72)~~ of said housing ~~(17)~~,

~~a~~ said groove ~~(19G) is~~ being formed positioned between the outer circumference of said shaft ~~(19)~~ and the inner wall of the hollow part ~~(73)~~ of said

housing ~~(17)~~ and having a first part ~~(19B)~~ into which said CO_2 gas is introduced on the outer circumference of said shaft ~~(19)~~ or the inner wall of the hollow part ~~(73)~~ of said housing ~~(17)~~ along a direction of flow of said CO_2 gas and a second part ~~(19T)~~ which continues from the first part, has a smaller cross section than the cross section of said first part, and from which said pressurized gas is discharged,

said O-ring ~~(11) is~~ being arranged at the first part of said groove contacting the outer circumference of said shaft ~~(19)~~ and the inner wall of the hollow part ~~(73)~~ of said housing ~~(17)~~, and

said backup ring ~~(13) is~~ being arranged at the second part of said groove.

Claims 26-29 (Cancelled)

Claim 30 (New): A CO_2 gas seal device comprising:

means for sealing the CO_2 gas; and

first and second connecting hollow members,

said first and second connecting hollow members being connected by a connection part having a hollow part for passing the CO_2 gas through it between said first connecting hollow member and said second connecting hollow member and forming a groove at a gas leakage part in the connection part,

said groove having a first part and a second part connected to the first part and having a sectional area smaller than that of the first part along the direction of leakage of said CO_2 gas, the second part having a tapered surface inclined so that its thickness becomes smaller along the direction of leakage of said CO_2 gas,

said gas sealing means having an O-ring made of rubber arranged at the first part of said groove and one backup ring made of 46Nylon arranged at the second part of said groove,

said backup ring having an inclined surface contacting the tapered surface of the second part of said groove, being enlarged in a diametrical direction at the second part of said groove by said CO_2 gas,

an angle of said inclined surface of said backup ring being larger than the angle of the tapered surface of the second part of said groove, an inclined surface of the first gas seal member being crushed at the time of the pressing action by said CO_2 gas to further narrow the clearance of said second part, and

a front end of the second part of said groove being provided with a clearance from which said backup ring can be projected, said first connecting hollow member having a first main body and a housing formed integrally with the first main body and having a hollow part,

said second connecting hollow member having a second main body and a shaft formed integrally with the second main body, having a hollow part, and having a shaft having an outside diameter enabling insertion into the hollow part of said housing,

said shaft being inserted with a predetermined clearance into an inner wall of the hollow part of said housing so that the hollow part of said shaft faces the hollow part of said housing,

said groove being positioned between the outer circumference of said shaft and the inner wall of the hollow part of said housing and having a first part into which said CO_2 gas is introduced on the outer circumference of said shaft or the inner wall of the hollow part of said housing along a direction of flow of said CO_2 gas and a second part which continues from the first part, having a smaller cross section than the cross section of said first part, and from which said pressurized gas is discharged,

said O-ring being arranged at the first part of said groove contacting the outer circumference of said shaft and the inner wall of the hollow part of said housing, and

said backup ring being arranged at the second part of said groove,

the second part of said groove being inclined so as to become shallower than a depth of said first part in a direction of discharge of said gas,

the angle of said inclined surface of said backup ring contacting the second part of said groove being larger than the angle of the inclined surface of the second part of said groove, and the front end of the inclined surface of the first gas seal member being crushed at the time of the pressing action by said pressurized gas to further narrow the clearance of said second part,

a second groove having a first part and a second part continuing from the first part and having a smaller cross section than that of said first part and being annularly formed at the periphery of said shaft along a direction of leakage of said CO_2 gas on either of the end surface of the front end of said housing or the end surface of the main body of said second connecting hollow member, and

a sheet-shaped second seal member being fit at the second part of said second groove.